National Aeronautics and
Space Administration

SYSTEMS REQUIREMENTS DOCUMENT (SRD)
FOR
Data Center Clustered Storage

March 31, 2011

1 SCOPE

1.1 PURPOSE

The purpose of the Data Center Cluster Storage is to provide a new storage system to meet the data store needs for current and future project requirements and to provide redundancy for critical systems so down time is minimized.

1.2 DESCRIPTION

This storage upgrade to our existing systems will replace our current technology, this need is a result of increased storage demands placed on our IT Infrastructure by the current and proposed Projects here at Dryden to support mission critical projects and to provide the best possible level of service to all of our customers. The new system needs to not only supply data when needed, it must be easily expandable and also act as the cornerstone of a storage COOP solution, providing redundancy, backups, and disaster recovery.

2 USER REQUIREMENT STATEMENT FOR THE DATA CENTER CLUSTERED STORAGE

2.1 GENERAL REQUIREMENTS

- The Data center storage solution must be compatible for use with current Data center infrastructure; this is to include all operating systems in use and the current backup architecture, Veritas 6.5 or higher.
- This storage must be clustered to provide failover capability with multi-pathing capability.
- This storage must support enterprise level IOPS support (>50,000 IOPS).
- This storage must be able to support multiple RAID configurations including RAID 5 with integrated hot spares and RAID 10.
- This storage must be able to clone volumes while in production and be able to support real-time, dynamic volume expansion.
- Storage equipment must be VM Certified hardware (i.e. VMware Ready).
- Storage must support NFS, CIFS, HTTP, iSCSI, NDMP, FTP and sFTP protocols.
- Storage must be able to support simultaneous connections to multiple networks.
- Storage networking must have the ability to support IP multi-pathing, VLAN tagging, link aggregation and 802.1q (QoS).
- Equipment must have unrestricted expansion cards.
- Equipment must have web based management console.
- Equipment must have dedicated read and write caches.
- Equipment must be able to support both 10Gb Cisco network infrastructure and fiber channel networking.
- Equipment must be SAS-2.0 drive compatible with 6 Gb/sec or better signaling rate.
- Equipment must be able to produce system generated alerts that are configurable.

- Equipment must have built-in health monitoring and metrics(e.g. available storage, used storage etc.).
- Equipment must be compatible to integrate with Active Directory and LDAP aware.
- Storage must support mirrored (bi-directional) replication over multiple interface types (e.g. 10Gbe, fibre channel) to storage appliance from other manufacturers.
- Dynamic reconfiguration of LUNs preferred.
- Storage must support snapshot and cloning of volumes.

2.2 STORAGE CAPACITY

- The storage solution must be scalable and able to provide at least 400TB (initial) usable storage.
- Equipment must be expandable to minimum 1PB usable storage capacity.

2.3 STORAGE SETUP AND INSTALLATION

- The Storage solution must be delivered with the storage preconfigured and will require no more than 7 days to have the storage available to the Data Center using our existing network.
- Provide on-site installation/integration services to include full training for up to four (4) system administrators. This training is to include operations and troubleshooting.
- Provide full system documentation after installation that include architecture drawings, system configuration data and document and full OEM operation and maintenance manuals

2.4 TECHNICAL SUPPORT

- Provide 24 hour 7 day support to the Center, with minimum 4 hours to be on-site during workweek and available for weekend support. This would include all spares or complete replacement.
- Support needs to be local to Edwards AFB/Kern County
- Must have available annual HW/SW maintenance contracts
- Equipment must be supportable for 5 years after installation and setup are complete

2.5 DATA CENTER COMPLIANCE

- The storage solution must be compatible with the current Data center infrastructure to include power and rack mounting.
- Power is 208 and equipment must have redundant power supplies.
- Racks are PARAMOUNT-44U-30W-45D and equipment must be free floating an able to fit inside these racks.
- Equipment must meet cooling architecture with hot/cold aisles.